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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,783	06/27/2003	Mike G. MacGregor	884.940US1	6466

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EXAMINER	
BROUSSARD, COREY M	
ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,783	MACGREGOR, MIKE G.	
	Examiner	Art Unit	
	Corey M. Broussard	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21-26, 33, 35, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Nelson et al. (PN 6,046,905). With respect to claim 21, Nelson teaches a heat sink (24, 30) that includes an upper surface and a lower surface and an opening extending between the upper and lower surfaces of the heat sink (holes in 24 for 45, see Fig. 2); a motherboard (14); an electronic device (18) between the motherboard and the lower surface of the heat sink; a pin (26) that engages the upper surface of the heat sink (the pin is inherently engaged with or held under the influence of the heat sink and all of it's surfaces), the pin extending through the opening in the heat sink and the motherboard to couple the heat sink to the electronic device and the motherboard (col 3, 27-28); and a member (45) within the opening in the heat sink, the member being between the heat sink and the pin (col 3, 13-15, 22-25, see Fig. 2).

1. With respect to claim 22, Nelson teaches wherein the member (45) is a bushing that is pressed into the opening in the heat sink (col 3 lines 13-15, 33-35, see Fig. 2).

3. With respect to claim 23, Nelson teaches wherein the pin is pressed through an opening in the bushing (col 3 lines 13-15, 33-35, see Fig. 2).

4. With respect to claim 24, Nelson teaches wherein the member (45) is plastic (col 3 lines 13-15, 33-35).

5. With respect to claim 25, Nelson teaches wherein the pin (26) includes a head (44) that is larger than the opening in the heat sink (see Fig. 2, col 3 lines 15-16, 34-35), the head of the pin engaging the upper surface of the heat sink (the head of the pin engages the heat sink and therefore must inherently engage all surfaces of the heat sink).

6. With respect to claim 26, Nelson teaches a thermally conducive material (40) between the heat sink and the electronic device (18, see Fig. 2, col 3, 38-40).

7. With respect to claim 33, the method is inherent in the apparatus of Nelson, Nelson teaches attaching an electronic device (18) to a motherboard (14); thermally coupling a heat sink to the electronic device (see Fig. 2, col 2, 65-67); positioning a member (45) within an opening in the heat sink; inserting a pin through the opening in the heat sink and the motherboard such that the pin (26) engages an upper surface of the heat sink and the member is between the pin and the heat sink; and securing the pin to the motherboard (col 3, 13-15, 33-35, see Fig. 2).

8. With respect to claim 35, Nelson teaches wherein positioning a member (45) within the opening in the heat sink (24) includes pressing a bushing into the opening in the heat sink (col 3, 13-15, 33-35, see Fig. 2).

9. With respect to claim 36, Nelson teaches wherein positioning a member (45) within the opening in the heat sink (24) includes positioning the entire member within

the opening in the heat sink (see Fig. 2, showing that the entire member is within the opening).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 27-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (PN 6,046,905) in view of Johnson et al (PN 4,321,423). With respect to claim 27, Nelson teaches a heat sink (24, 30) that includes an opening extending through the heat sink; a motherboard (14); an electronic device (18) between the motherboard and the heat sink; a pin (26) that extends through the opening in the heat sink (see Fig. 2); and a member (45) within the opening in the heat sink, the member being between the heat sink and the pin (col 3, 14-16). Nelson lacks specific teaching of wherein the pin is soldered to the motherboard to couple the heat sink to the electronic device and the motherboard. Johnson teaches wave soldering the pin (9, 10) to the motherboard (8, col 3 lines 50-62). It would have been obvious to use the wave soldering technique taught by Johnson to connect the pins to the motherboard of Nelson for the benefit of strong electrical and mechanical connection between the pin and the motherboard.

12. With respect to claim 28, Nelson teaches wherein the member (45) is a bushing that is pressed into the opening in the heat sink (24, 30) and the pin (26) is pressed through an opening in the bushing (col 3, 14-16, see Fig. 2).

13. With respect to claim 29, Nelson teaches wherein the heat sink (24, 30) includes an upper surface and a lower surface such that the opening (openings in 24 for 26, see Fig. 2) extends between the upper and lower surfaces of the heat sink, the pin (26) engaging the upper surface of the heat sink and the electronic device (18) engaging the lower surface of the heat sink (the pins and electronic device inherently engage all surfaces of the heat sink, see Fig. 2).

14. With respect to claim 30, Nelson teaches wherein the pin (26) includes a head (44) that is larger than the opening in the heat sink (see Fig. 2, col 3 lines 15-16, 34-35), the head of the pin engaging the upper surface of the heat sink (the head of the pin engages the heat sink and therefore must inherently engage all surfaces of the heat sink).

15. With respect to claim 31, Nelson teaches wherein the pin (26) includes a body that is cylindrical, and the opening in the heat sink (24, 30) is cylindrical (see Fig. 2, 3).

16. With respect to claim 32, Nelson teaches a thermally conducive material (40) between the heat sink and the electronic device (18, see Fig. 2, col 3, 38-40).

17. With respect to claim 34, Nelson teaches the device as applied to claim 33 above, but lacks specific teaching of wave soldering the pin to the motherboard. Johnson teaches wave soldering the pin (9, 10) to the motherboard (8, col 3 lines 50-62). It would have been obvious to use the wave soldering technique taught by

Johnson to connect the pins to the motherboard of Nelson for the benefit of strong electrical and mechanical connection between the pin and the motherboard.

18. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (PN 6,046,905) in view of Ruegg (PN 4,266,267). Nelson teaches the device as applied to claim 33 above, but lacks specific teaching of wherein the member is more elastic than the pin and the heat sink. Ruegg teaches wherein positioning a member (16, 17) between the pin (15) and the heat sink (12) within the opening in the heat sink includes placing a member that is more elastic (16 is made from a resilient material such as silicone rubber, see col 2 lines 63-66) than the pin and the heat sink between the pin and the heat sink to alleviate stress between the pin and heat sink (the heat sink is made of a metal material, see col 2 line 40, and it is known to use metal machine screws. Silicone rubber is more elastic than metal). It would have been obvious to combine the elastic member of Ruegg with the heat sink mounting apparatus of Nelson for the benefit of increased electrical insulation between the circuit board and the heat sink.

19. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (PN 6,046,905) in view of Cohen (PN 6,549,410). With respect to claim 38, Nelson teaches a heat sink (24, 30) that includes an upper surface and a lower surface and an opening (opening for pins 26, see Fig. 2) extending between the upper and lower surfaces of the heat sink; a mother board (14); an electronic device (18) between the motherboard and the lower surface of the heat sink; a pin (26) that engages the upper surface of the heat sink (the pin is engaged with all surfaces

including the upper surface of the heat sink), the pin extending through the opening in the heat sink and the motherboard to couple the heat sink to the electronic and the motherboard (col 2, 44-46, col 3, 14-17, see Fig. 2); a member (45) within the opening in the heat sink, the member being between the heat sink and the pin (col 3, 14-16, see Fig. 2). Nelson lacks specific teaching of wherein the motherboard is attached to the chassis. Choen teaches a chassis (24), the motherboard (26) attached to the chassis. It would have been obvious to a person of ordinary skill in the electrical art to combine the chassis mounted motherboard of Cohen with the heat sink mounting structure of Nelson for the benefit of allowing large and heavy heat sinks offering increased heat dissipation where the weight of the heat sink is not fully supported by the motherboard.

20. With respect to claim 39, Nelson teaches wherein the member (45) is a bushing that is pressed into the opening in the heat sink (24, 30, col 3, 14-16).

21. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (PN 6,046,905) in view of Cohen (PN 6,549,410) as applied to claim 38 above, and further in view of Johnson et al (PN 4,321,423). Nelson in view of Cohen lacks specific teaching of the pin soldered to the motherboard. Johnson teaches wave soldering the pin (9, 10) to the motherboard (8, col 3 lines 50-62). It would have been obvious to use the wave soldering technique taught by Johnson to connect the pins to the motherboard of Nelson for the benefit of strong electrical and mechanical connection between the pin and the motherboard.

Response to Arguments

22. Applicant's arguments filed 5/18/2005 have been fully considered but they are not persuasive. In response to the Applicant's argument that Nelson teaches away from any type of soldered connection, the Examiner respectfully disagrees. Nelson teaches the use of a clamp with spring bent portions in order to provide a minimum pull force (col 3, 4-6). Nelson also teaches that the pull force of the fastener on the heat sink decreases the thermal impedance of the heat sink interface (col 1, 39-41). Therefore Nelson suggests that the pull force is desirable, but teaches a clamp that only provides a minimum pull force. Nelson lacks any teaching or suggestion stating that a soldered connection would be unable to provide a desirable pull force. Johnston notes the conventionality of spring clip connectors for heat sinks (col 1, 38-43). Johnston teaches that a soldered connection offers advantages over clip connectors (col 2, 16-29). Therefore it would have been obvious to take the suggestion of soldered connections of Johnston to use instead of the clamp taught by Nelson to provide the pull force for the heat sink. The combination would eliminate the clamp which would eliminate the need for the pins 26 to move through the motherboard of Nelson.

23. The Applicant's argument with respect to the pins 52 is moot in view of the new grounds of rejection.

Conclusion

24. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey M. Broussard whose telephone number is 571 272 2799. The examiner can normally be reached on 7:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on 571 272 2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER